KENDRIYA VIDYALAYA SANGATHAN, GURUGRAM REGION

PRE-BOARD EXAMINATION 2025-26

CLASS: **XTH** MAX MARKS: **50**
SUBJECT: **ARTIFICIAL INTELLIGENCE** TIME: **2 HRS.**

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of 21 questions in two sections: Section A & Section B.
3. Section A has Objective type questions, whereas Section B contains Subjective type questions.
4. Out of the given (5 + 16 =) 21 questions, a candidate has to answer (5 + 10 =) 15 questions in the allotted (maximum) time of 2 hours.
5. All questions of a particular section must be attempted in the correct order.
6. SECTION A - OBJECTIVE TYPE QUESTIONS (24 MARKS):
   - This section has 05 questions.
   - Marks allotted are mentioned against each question/part.
   - There is no negative marking.
   - Do as per the instructions given.
7. SECTION B - SUBJECTIVE TYPE QUESTIONS (26 MARKS):
   - This section has 16 questions.
   - A candidate has to answer 10 questions.
   - Do as per the instructions given.
   - Marks allotted are mentioned against each question/part.

SECTION A: OBJECTIVE TYPE QUESTIONS

Q. No.	Question	Marks
Q. 1	**Answer any 4 out of the given 6 questions on Employability Skills.**	**1x4=4**
i.	Effective oral communication is fundamentally based on which of the following pairs? (a) Facial expressions and body language (b) Language and tone of voice (c) Listening and (d) Signs and symbols	1
ii.	Parvathi diligently follows a strict morning routine of badminton practice and homework completion before school, all on her own initiative. This behavior is a prime example of: (a) External motivation (b) Self-motivation (c) Extrinsic pressure (d) Peer influence	1
iii.	Which of the following is classified as system software? (a) Adobe Photoshop (b) MS Excel (c) Windows 10 (d) VLC Player	1

iv.	How do entrepreneurs primarily foster societal development? (a) By increasing product prices (b) By generating employment opportunities (c) By reducing competition (d) By consuming local resources without replenishment	1
v	Which of the following energy sources is considered renewable? (a) Coal (b) Solar energy (c) Petrol (d) Natural gas	1
vi	When a sender's message is interpreted differently than intended, it signifies a barrier to which type of communication? (a) Interpersonal (b) Organizational (c) Linguistic (d) Physical	1
Q. 2	**Answer any 5 out of the given 6 questions.**	**1 x 5 = 5**
i.	**Assertion (A):** Ethics serve as a crucial guide for differentiating between right and wrong actions. **Reason (R):** They are composed of a set of morals and values that assist in making principled judgments. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
ii.	**Assertion (A):** Supervised learning models are trained using labelled datasets. **Reason (R):** The labels in the data help the model to understand the mapping between inputs and the correct outputs. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
iii.	**Assertion (A):** Unsupervised learning is effective at discovering hidden structures within data. **Reason (R):** This learning approach mandates the use of pre-labelled data for accurate classification.	1

	(a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	
iv.	**Assertion (A):** In computer vision, object detection is a more intricate task than simple image classification. **Reason (R):** Object detection requires not only identifying the class of an object but also determining its precise location within the image. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
v	**Assertion (A):** A grayscale image represents intensity information using a single byte for each pixel. **Reason (R):** Every pixel in a grayscale image is defined by three distinct intensity values, each ranging from 0 to 255. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
vi	**Assertion (A):** Reinforcement learning models function without the need for labelled data. **Reason (R):** The learning process is driven by the feedback (rewards or penalties) the model receives in response to its actions. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1

Q. 3	**Answer any 5 out of the given 6 questions.**	**1 x 5 = 5**
i.	The initial stage of the AI project cycle, Problem Scoping, aims to achieve what primary objective? (a) To collect relevant data (b) To train the AI model (c) To clearly understand and define the project's goal (d) To process the acquired data	1
ii.	The domain of AI focused on systems that gather, manage, and derive insights from large datasets is known as: (a) Computer Vision (b) Natural Language Processing (c) Statistical Data Analysis (d) Reinforcement Learning	1
iii.	What is the main purpose of Natural Language Processing (NLP)? (a) To analyze computer programming languages (b) To enable interaction between computers and humans using natural language (c) To enhance human-to-human communication protocols (d) To process visual data from images	1
iv.	Which of the following scenarios is a typical application of supervised learning? (a) Grouping customers into distinct segments based on their shopping habits (b) Classifying emails as either 'spam' or 'not spam' (c) Discovering unusual patterns in financial transactions (d) An AI learning to play chess through self-play	1
v	An AI model that learns and improves its performance based on a system of rewards and penalties is using which learning paradigm? (a) Supervised Learning (b) Unsupervised Learning (c) Reinforcement Learning (d) Rule-based Learning	1
vi	When the output of a model is unknown and the algorithm must find patterns or structures in the data on its own, which type of learning is employed? (a) Supervised (b) Reinforcement (c) Unsupervised (d) Logical	1

Q. 4	**Answer any 5 out of the given 6 questions.**	**1 x 5 = 5**
i.	A table that systematically compares an AI model's predicted outcomes against the actual outcomes is known as a: (a) Regression Matrix (b) Confusion Matrix (c) Classification Table (d) Prediction Chart	1
ii.	In a confusion matrix, what is the term for an outcome where the model correctly predicts a positive class? (a) False Positive (b) True Negative (c) True Positive (d) False Negative	1
iii.	A developer trains a model on a dataset and then uses the exact same data to test it, leading to perfect scores on that data but poor performance on new data. This situation is called: (a) Underfitting (b) Best fit (c) Overfitting (d) Regression	1
iv.	Which term refers to a deep learning model specifically architected for analyzing visual data like images? (a) Central Neural Network (CNN) (b) Computer Network Node (CNN) (c) Convolutional Neural Network (CNN) (d) Convoluted Network Node (CNN)	1
v	The color model predominantly used to represent digital images, based on three primary colors, is: (a) CMYK (b) HSV (c) RYB (d) RGB	1
vi	In a Convolutional Neural Network (CNN), what is the primary function of the pooling layer? (a) To increase the size of the image (b) To convert the image to a different format (c) To reduce the computational complexity and dimensions (d) To add more details to the image	1
Q. 5	**Answer any 5 out of the given 6 questions.**	**1 x 5 = 5**
i.	Which application of NLP is designed to gauge the emotional tone or opinion expressed in a piece of text? (a) Sentiment analysis (b) Virtual assistants (c) Text classification (d) Automatic summarization	1

ii.	What is the purpose of the 'Bag of Words' model in NLP? (a) To correct grammatical errors (b) To determine the sentiment of text (c) To find the frequency of words in a text sample (d) To translate text between languages	1
iii.	The process of converting text from one human language to another, such as from English to French, is known as: (a) Text Summarization (b) Machine Translation (c) Sentiment Analysis (d) Language Generation	1
iv.	The NLP technique of breaking down a sentence or a string of text into its individual component words is called: (a) Word Tokenization (b) Classification (c) Regression (d) Clustering	1
v	Common words like 'a', 'the', and 'is' are often removed during text preprocessing because they carry little semantic weight. What are these words called? (a) Keywords (b) Stop words (c) Root words (d) Action words	1
vi	Reducing the word "studies" to its root form "studi" is an example of which text normalization process? (a) Tokenization (b) Lemmatization (c) Stop word removal (d) Stemming	1

SECTION B: SUBJECTIVE TYPE QUESTIONS

Q. No.	Question	Marks
	Answer any 3 out of the given 5 questions on Employability Skills.	**2 x 3 = 6**
Q. 6	What does verbal communication entail?	2
Q. 7	Outline the significance of goal-setting in one's life.	2
Q. 8	Define an operating system and provide two common examples.	2
Q. 9	Identify two defining characteristics of a successful entrepreneur.	2
Q. 10	What is meant by the term 'Green Skills'?	2

	Answer any 4 out of the given 6 questions.	**2 x 4 = 8**
Q. 11	What is the fundamental purpose of implementing an AI Project Cycle?	2
Q. 12	Characterize Machine Learning (ML) and mention two of its applications.	2
Q. 13	How is the term 'Evaluation' defined in the context of AI models?	2
Q. 14	Explain the concept of a 'True Negative' outcome in model evaluation.	2
Q. 15	Define Computer Vision and state one of its real-world applications.	2
Q. 16	In Natural Language Processing, distinguish between syntax and semantics.	2
	Answer any 3 out of the given 5 questions.	**4 x 3 = 12**
Q. 17	A junior data scientist is new to the AI Project Cycle. Guide them by explaining the purpose and components of both the '4Ws Problem Canvas' and the 'Problem Statement Template' used in the Problem Scoping phase.	4
Q. 18	Elucidate the structure of an Artificial Neural Network (ANN). Describe the distinct roles of its three primary layers: the Input Layer, the Hidden Layer(s), and the Output Layer.	4
Q. 19	Explain the concept of 'Accuracy' as a model evaluation metric. Provide the formula used for its calculation based on the components of a confusion matrix (True Positives, True Negatives, False Positives, False Negatives).	4
Q. 20	In the domain of computer vision, differentiate among the following four tasks: Image Classification, Classification with Localization, Object Detection, and Instance Segmentation. Provide a distinct example for each to illustrate their differences.	4
Q. 21	Describe the process of 'Text Normalization' in NLP. Briefly explain the key steps involved in transforming raw text into a normalized format suitable for analysis.	4